

1876.

## NEW ZEALAND.

EIGHTH ANNUAL REPORT OF THE NEW ZEALAND INSTITUTE,  
1875-76.

*Presented to both Houses of the General Assembly by Command of His Excellency.*

THE Board of Governors held meetings during the past year, on the 11th October, 1875; 5th January, 14th February, 9th March, 22nd March, 17th June, and 12th July, 1876.

The three members of the Board who retired in conformity with the sixth clause of the Act have been reappointed by His Excellency the Governor—viz., the Hon. G. M. Waterhouse, Dr. Hector, C.M.G., F.R.S., and W. T. L. Travers, Esq., F.L.S., and the Ven. Archdeacon Stock has been appointed in the room of Alfred Ludlam, Esq., resigned.

The elected Governors are—J. C. Crawford, Esq. F.G.S.; His Honor J. A. Bonar; and Thomas Kirk, Esq., F.L.S.

The honorary members elected in conformity with Statute IV. of the Rules of the Institute are—Philip Sutley Sclater, Esq., Ph.D., F.R.S.; Professor Rolleston, F.R.S.; and Dr. Filhol.

The number of members now on the roll of the Institute is as follows:—

Honorary members	...	...	...	...	...	...	22
						<i>Ordinary Members.</i>	
Auckland Institute	...	...	...	...	...	...	219
Wellington Philosophical Society	...	...	...	...	...	...	180
Hawke Bay Philosophical Institute	...	...	...	...	...	...	59
Westland Institute	...	...	...	...	...	...	48
Nelson Association	...	...	...	...	...	...	54
Canterbury Philosophical Institute	...	...	...	...	...	...	93
Otago Institute	...	...	...	...	...	...	200
Total	...	...	...	...	...	...	875

From the above, it will be seen that two new societies have been incorporated since last report—viz., the Hawke Bay Philosophical Institute, and the Westland Institute, making in all seven societies now affiliated with the New Zealand Institute.

Copies of the last volume of Transactions (VIII.) have been distributed to all the members, and also to those persons and societies mentioned on the free list herewith appended.

The publication of the volume for 1875 was commenced in January, and finished at the latter end of May, occupying a period of five months; the edition has been increased to 1,000 volumes, and, owing to the increasing popularity of the various incorporated societies, it may be necessary to still further enlarge the edition.

The present volume is somewhat smaller than last year's, the difference arising chiefly from the proceedings of the societies being less voluminous. As compared with last year's issue, the sections of the work are as under:—

Miscellaneous	...	...	...	...	1875.	1874.
Zoology	...	...	...	...	179 pages.	195 pages.
Botany	...	...	...	...	31 "	46 "
Chemistry	...	...	...	...	20 "	30 "
Geology	...	...	...	...	39 "	57 "
Proceedings	...	...	...	...	50 "	101 "

The Appendix contains important tables relating to the climate of New Zealand, compiled under the direction of the Meteorological Inspector (in anticipation of the Annual Report), from returns furnished from the various meteorological stations throughout New Zealand, with accompanying notes on the weather for 1875; and also a paper on New Zealand Surveys, which was ordered to be printed after the miscellaneous portion of the work was completed.

The attention of Secretaries of incorporated Societies is again directed to the necessity of forwarding manuscript in an easily readable form, because, owing to impossibility of referring questions of doubt as to particular rendering of words and sentences to the authors, in some cases it is very difficult to arrive at an author's meaning, and the publishers cannot keep the type standing for any length of time without being subject to considerable loss. It must be borne in mind that a work of a scientific character, treating of so many different subjects, and in the present volume consisting of fifty-seven different articles (in few cases revised by the authors), is far more likely to contain errors than a work by one person, who is also generally his own editor. It is desired that all papers for the present year, 1876, should be forwarded to the Manager, before the 31st December, if it is wished that they should appear in the next volume.

The number of volumes now on hand is as follows:—Vol. I., second edition, 560 copies; Vol. II., 13 copies; Vol. III., 10 copies; Vol. IV., 14 copies; Vol. V., 87 copies; Vol. VI., 78 copies; Vol. VII., 221 copies; Vol. VIII., 30 copies.

The statement of the accounts of the Institute by the Honorary Treasurer is herewith appended, in which is shown a balance in hand of £218 4s. 4d.

The Governors have received applications from large numbers of scientific bodies in Europe and America for exchange of the Transactions of the Institute for their own publications, and are of opinion that it would be advantageous to the colony that such applications should, if possible, be acceded to. But as the funds at the disposal of the Governors render it difficult to carry this out, they venture to suggest that the annual grant should be increased by the sum of £100, which would enable them to comply with the requests made to them.

The progress reports of various departments under the Manager are also appended.

FREE LIST FOR ISSUE OF THE TRANSACTIONS.

- |                |   |
|----------------|---|
| No.<br>Copies. |   |
| 1              | His Excellency the Governor, President of the Society.          |
| 12             | Governors of the Institute. (See printed list in Transactions.) |
| 22             | Honorary members. (See printed list in Transactions.)           |
| 1              | The Prime Minister.   |
| 1              | The Colonial Treasurer.   |
| 1              | The Native Minister.  |
| 1              | The Under Colonial Secretary.                                   |
| 2              | For Parliament.   |

*Foreign Societies, Libraries, &c.*

- 1 The Colonial Office, London.
- 1 The Agent-General, London.
- 1 Trübner and Co. (Agents), London.
- 1 The British Museum, London:
- 1 The Royal Society, London.\*
- 1 The Royal Geographical Society, London.\*
- 1 Ethnological Society, London.\*
- 1 Geological Society, London.\*
- 1 Zoological Society, London.\*
- 1 Geological Survey of the United Kingdom, London.\*
- 1 Geological Magazine. (For Review.)
- 1 Literary Institute, Norwich, England.\*
- 1 The University Library, Edinburgh.\*
- 1 The Royal Society, Dublin.\*
- 1 The Philosophical Society of Leeds, England.\*
- 1 Smithsonian Institute, Washington.\*
- 1 Geological Survey of India.\*
- 1 Royal Society of Tasmania Library.\*
- 1 The Public Library of Melbourne.
- 1 South Australian Institute Library.\*
- 1 Royal Society of Victoria, Melbourne.\*
- 1 University Library, Sydney.
- 1 Public Library of Tasmania.
- 1 Legislative Library, Adelaide.
- 1 Public Library, Sydney.
- 1 Royal Society, New South Wales.\*
- 1 Academy of Natural Science Library, Philadelphia, U.S.\*
- 1 Academy of Natural Science, San Francisco.\*
- 1 Oxford University Library, England.
- 1 Imperial German Academy of Naturalists, Dresden.\*
- 1 Cambridge University Library, England.
- 1 Linnean Society.\*
- 1 Royal Society, Edinburgh.
- 1 Edinburgh Geological Society.
- 1 Anthropological Institute of Great Britain and Ireland.

\* Exchanges.

*Contributions and Exchanges.*

- 1 His Excellency Governor Weld, Tasmania.
- 1 Professor Balfour, Edinburgh.
- 1 Professor McCoy, Melbourne.
- 1 Chairman of School Library Committee, Eton, Bucks., England.
- 1 Chairman of School Library Committee, Harrow, England.
- 1 Chairman of School Library Committee, Rugby, Warwickshire, England.
- 1 President of Natural History Society, Marlborough College, Marlborough, Wilts.
- 1 Colonel Jewett, New York.
- 1 Dr. Wojeikof, St. Petersburg.
- 1 Hon. Mr. Casey, Victorian Government.
- 1 Dr. Hann, for the Royal Imperial Institute for Meteorology and Earth Magnetism, Hohe-Warte, near Vienna.
- 1 Dr. Berggren, University of Lund, Sweden.

*Libraries and Societies in New Zealand.*

- 1 Secretary, Auckland Institute.
- 1 Secretary, Wellington Philosophical Society.
- 1 Secretary, Philosophical Institute of Canterbury.
- 1 Secretary, Nelson Association.
- 1 Secretary, Otago Institute.
- 1 Secretary, Hawke Bay Philosophical Institute.
- 1 Secretary, Westland Institute.
- 1 General Assembly Library.
- 9 Provincial Council Libraries.

*Publishing Branch.*

- 1 Editor.
- 1 Assistant Editor.
- 2 Draftsman.
- 1 Lithographer.
- 1 Government Printer.

Total, 111 copies.

*Museum.*

The new building was open to the public on 3rd January, and, up to the end of 8th July, 8,776 names have been entered in the visitors' book. The arrangement of the contents, however, is only provisional, as show-cases and other furniture ordered from England has not yet arrived.

The total number of specimens received into the Museum during 1875-76 is 14,525; this includes about 13,090 specimens collected in the field by the officers of the Geological Survey Department. (See remarks under the head of Palæontology.)

The packing and re-arrangement of the collections during the erection of the building occupied much time; but, notwithstanding, material progress has been made with the draft catalogues of the contents of the Museum, and a large series of new preparations are ready to be exhibited as soon as the cases can be arranged. Among these are 331 bird skins, which have been stuffed and mounted by the Taxidermist. The former collections have also been cleaned and re-mounted.

*Herbarium.*—The collection of New Zealand and foreign plants, estimated to comprise 5,000 species, has been thoroughly re-arranged on a convenient system for reference. An addition to the Herbarium of about 10,000 species, presented by the Trustees of the British Museum, has been shipped from England. The Herbarium is entirely in charge of the Draftsman, whose work in this branch comprises forty lithographed plates, fifty manuscript maps for the Geological Survey, besides a large number of Natural History drawings for the Department.

*Mammalia.*—The most important addition under this head has been a type collection of 95 stuffed animals and 102 skeletons, received from the British Museum in exchange.

*Birds.*—The skins and skeletons from the British Museum, noted in the list of donations, are the most interesting of those received. An increase in the duplicate specimens of New Zealand birds in the Museum has been made during the past year. A fine series of 911 North American birds' eggs has been obtained by exchange with Mr. Buckley, of Birmingham.

*Reptilia.*—Several fine specimens of the Tuatara lizard (*Sphaenodon punctatus*) have been presented by Mr. L. B. Wilson, of the Marine Department, who obtained them from the Brother Islands during the survey for the new lighthouse.

*Fishes.*—From the British Museum we have also the most important addition under this head—viz., 100 species, part of which are stuffed, and the rest in spirit.

*Invertebrata.*—A fine collection of New Zealand insects, *Coleoptera*, presented by Mr. C. M. Wakefield, and those received from the British Museum.

The collection of land shells (354 species) from the British Museum is also an important addition to the Museum.

*Palæontology.*—During the present year a further examination has been undertaken of the Reefton district. This work went to confirm what was previously almost settled—viz., that the fossiliferous slates and madreporic limestones of Devonian age which occur in this district are overlaid unconformably by the auriferous slates (Maitai series?)

No new fossils were discovered in these beds, but portions of two large trilobites were secured.

The auriferous slates are still, as ever, devoid of fossils; they have been traced from Reefton south as far as the Grey, and are also seen as isolated patches at Ross and still further south, no fossils, however, showing in them.

From the slates occurring to the eastward of the belt of crystalline rocks, which strike through the island from north to south, an indistinct fossil annelid is obtained, the character of which has not as yet been determined; it is, however, identical with one which occurs in similar rocks near Nelson, and similar to a fossil in the slates of Mount Torlesse and in the Ashley Gorge.

It is probable that these slates are identical with the auriferous slates of Reefton before mentioned; and it is in them that the gold-bearing reefs of the Taipo Ranges occur.

At Callaghan's Hill, Westland, and at the Waimea Township, collections were made from the calcareous and green sand beds of the Kanieri series; and these collections, together with one made at Redman's Creek, near Ross, may be taken as typical of the beds throughout the vast extent of country over which they occur.

At the Abbey Rocks a development of the coal measures occurs, in the shales of which fossil ferns, &c., have been found; and from certain beds of green sand, overlying the coal measures, a somewhat indistinct collection of fossils was obtained, but sufficient to identify the horizon as that of the Middle Amuri green sands, overlaid by the Amuri limestone.

It is in connection with these latter beds that the deposits of lithographic stone occur, which have recently been commanding a certain amount of attention.

The argenteriferous lodes of Richmond Hill and Mount Rangitoto have been examined and reported upon.

Part of the east coast of the North Island has also been run over somewhat hurriedly, and collections made from the extensions of the Castle Point beds north of Napier, and also from the cretaceous tertiary beds (Leda marls, &c.) which cover a large area of the country surveyed.

From the coal measures of the Buller coal field, immediately associated with the coal, some large oysters have been obtained, identical with those which are found in the sandstone overlying the brown coal at the Nine-Mile Bluff, north of the Grey.

In consequence of the great interest attached to the study of our Upper Mesozoic formations, it was considered desirable to make exhaustive collections of fossil remains from the Amuri series, and these comprise by far the greatest bulk of the addition to the Museum during the past year.

Mr. McKay, who was employed on this work, reports that he has collected approximately as many as 10,000 specimens of shells from the various horizons, in addition to which portions of not less than 150 Saurians have been secured, which will, it is hoped, tend to throw considerable light upon points in the anatomy of known species which have hitherto been of a doubtful character, in addition to which the number of species will, in all probability, be augmented.

As the collections are at present being unpacked, it is impossible to give any further information concerning them.

Advices have been received of a large shipment of fossils, obtained as exchanges and donations by the Manager, from correspondents in England.

*Collections sent from Colonial Museum in Exchange, or as Presentations to other Museums, &c., from 1st November, 1875, to July, 1876.*

I. Collection of New Zealand insects, in exchange for others received at Colonial Museum, to Mr. C. M. Wakefield.

II. Small miscellaneous collection for the Christiana Museum.—Mr. Graff.

*Laboratory.*

The number of analyses made in the laboratory during the past year is 133—viz., coal, 18; minerals, 49; metals and ores, 36; gold, 5; miscellaneous, 25.

A full report of these analyses is given in the Annual Report by the Analyst.

19th September, 1876.

JAMES HECTOR,  
Manager.

ACCOUNTS OF THE NEW ZEALAND INSTITUTE FOR 1875-76.

RECEIPTS.				EXPENDITURE.			
Balance in hand, October, 1875	...	...	£ 48 19 11	Expenses of Printing Volume VIII....	...	...	£ 370 11 1
Vote for 1875-76	...	...	500 0 0	Binding Volumes for Library	...	...	3 14 0
Contribution from Wellington Philosophical Society	...	...	29 15 0	Miscellaneous items	...	...	3 1 6
Sale of Transactions	...	...	16 16 0	Balance	...	...	218 4 4
			£595 10 11				£595 10 11

19th September, 1876.

ARTHUR STOCK,  
Hon. Treasurer.